

REMARKS/ARGUMENTS

Claims 1 through 20, 22 through 27 and 30 are pending in the application. Claims 20 and 22 through 27 have been allowed with claims 1 through 19 and 30 rejected. Claims 1, 10 and 30 have been amended and therefore claims 1 through 20, 22, through 27 and 30 remain in the application.

The Examiner's indication that the originally-filed drawings are accepted is very much appreciated. Additionally, the Examiner's acknowledgement of applicants' claim for priority and receipt of the certified copy of the priority documents is very much appreciated. Finally the Examiner's consideration of the prior art submitted with applicants' Information Disclosure Statement is appreciated.

Claim 30 stands rejected under 35 U.S.C. §112 (second paragraph) as allegedly being indefinite. Claim 30 specifies a method of transmitting light along a photonic crystal fiber wherein the fiber is a fiber as set out in claim 1. The Examiner's attention is directed to the case considered by the U.S. PTO Board of Patent Appeals and Interferences, *Ex parte Porter*, 25 U.S.P.Q. 2d, 1144, 1147 (BOPAI 1992). In a very similar case there, the Examiner had rejected claim 6 alleging that there was no method step and the claim with method claim 6 depending from apparatus claim 1.

The Board concluded that contrary to the Examiner's assertion, the claim clearly recited the step of "utilizing" and that such single step method claims were clearly patentable. Moreover, the Board concluded that this method claim dependent from apparatus claim 1 is a method of drafting "in a short hand format" to avoid the necessity

of rewriting the particulars of the apparatus in claim 1. Therefore it is submitted that applicants originally submitted claim 30 was proper and recited the step of transmitting light along the photonic crystal fiber of claim 1.

However, applicants have amended claim 30 to more clearly recite the steps of providing a light source and arranging for light source to enter the fiber for transmission therethrough. Accordingly, any further objection to claim 30 is respectfully traversed.

Claims 1 through 7, 9 through 12, 14, 15, 17 through 19 and 30 stand rejected under 35 U.S.C. §103 as being anticipated by DiGiovanni (U.S. patent 5,802,236). Applicants' specification (in the discussion of prior art on page 1, lines 19 through 24) discusses the known prior art method of guiding light through an optical fiber where "the refractive index of the material forming the core must be higher than that of the material forming the cladding, in order to achieve total internal reflection."

DiGiovanni specifies the same relationship at column 5, lines 57 to 60, i.e., "both cladding regions have lower effective refractive index than the core region." Thus DiGiovanni, like the prior art discussed in the background of applicants' specification, requires that the cladding have a lower refractive index than the core or the core refractive index must be higher than the cladding. Thus DiGiovanni clearly teaches the prior art discussed in the background of applicants' specification.

Turning to applicants' independent claims 1 and 10, both recite that there is a region of lower refractive index "substantially surrounded by cladding which includes regions of higher refractive index." In other words applicants' claimed subject matter is

the direct opposite to that disclosed in the prior art and discussed in the DiGiovanni reference, i.e., the core region has a lower refractive index and it is surrounded by a cladding region which includes regions of a higher refractive index. As a result not only does DiGiovanni fail to teach the subject matter recited in claims 1 to 7 and 9 to 12, 14, 15, 17 to 19 and 30, it specifically teaches away from applicants' claimed combination of elements. Accordingly, these claims are clearly patentable over the DiGiovanni reference.

Claims 13 and 16 stand rejected under 35 U.S.C. §103 as being unpatentable over DiGiovanni. Inasmuch as claims 13 and 16 ultimately depend from and include the limitations set out in claim 10, the above comments pointing out that DiGiovanni teaches away from applicants' claimed invention are herein incorporated by reference.

Additionally, claim 16 specifies a sensor that is capable of sensing a property of a gas and the Examiner's position is that this is suggested in DiGiovanni at column 1, lines 42 to 52. The referenced portion of DiGiovanni, i.e., column 1, lines 42 to 52 says nothing about the subject matter of claim 16 except that a prior art reference purportedly suggests "a novel gas sensor" column 1, line 50 and 51. There is no disclosure of how such a gas sensor is provided or how the photonic crystal fiber of claim 1 is created. Accordingly, there is simply no basis for rejection of claims 13 and 16 under 35 U.S.C. §103.

Claim 8 stands rejected under 35 U.S.C. §103 as unpatentable over DiGiovanni as previously applied and further in view of Birks. The Examiner admits that DiGiovanni

fails to teach a lower refractive index portion to be a low pressure region. This admission is very much appreciated. Moreover in that claim 8 depends from claim 1, the above arguments distinguishing claim 1 over the DiGiovanni reference are herein incorporated by reference.

There is no disclosure that Birks teaches the subject matter of claim 8, i.e., the photonic crystal of claim 1 wherein the lower refractive index region is a low pressure region. A Review of Birks indicates on page 11 that a low pressure region may be existent in the holes which form the cladding but does not suggest that the core material 7 comprises a low pressure region. Where the Examiner believes this to be disclosed in Birks is questioned and clarification is respectfully requested. Absent any teaching in Birks and in view of the fact that DiGiovanni teaches away from applicants' claim 1 from which claim 8 depends, it is submitted that claim 8 is clearly patentable over the DiGiovanni/Birks combination.

The Examiner's allowance of claims 20 and 22 through 27 is very much appreciated.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that pending claims 1 through 20, 22 through 27 and 30 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact applicants' undersigned representative.

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Respectfully submitted,

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